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THE

# Journal of the Society of Arts,

AND OF

## THE INSTITUTIONS IN UNION.

111TH SESSION.]

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### Announcements by the Council.

#### MUSICAL EDUCATION COMMITTEE.

This Committee are now meeting once or oftener in the week. They have taken evidence from Sir George Clerk, Bart., Mr. H. F. Chorley, Mr. Otto Goldschmidt, and Mr. Lucas, the Principal of the Royal Academy of Music, which will be published in the *Journal*.

#### FINAL EXAMINATIONS, 1865.

The following alterations and additions should be made in the list of successful candidates:—

Omit 875—Ashmore, Isaac, 18, St. Thomas's Young Men's Christian Inst., pupil teacher.

After 869—Bradbury, Edwin, omit Arith. (3d), he not having worked a paper in that subject.

For 1338—Fielding, John, 17, Bradford M.I., clerk, Arith (2d), read 1337, Alfred Goulton Hooper, 18, Bradford M.I., banker's clerk—Arith. (2d)

### Proceedings of the Society.

#### CONVERSAZIONE.

A Conversazione took place at the South Kensington Museum on Wednesday evening, the 14th inst., when about 3,700 members of the Society and their friends were present. The company was received on entering by Mr. William Hawes, Chairman of the Council. The bands of the Royal Artillery and of the Coldstream Guards were in attendance, and performed selections of music during the evening.

The exhibitions of Portrait Miniatures, and of the Raphael Cartoons were open, and excited considerable interest.

#### FOURTEENTH ANNUAL CONFERENCE.

The Fourteenth Annual Conference of the Representatives of the Institutions in Union, and the Local Educational Boards, with the Council of the Society, was held at the Society's House on Wednesday, the 14th inst, at 12 o'clock, noon. WILLIAM HAWES, Esq., F.G.S., Chairman of the Council, presided.

The following is a list of the Institutions and Local Educational Boards represented at the Conference, with the names of their respective representatives:—

Aldershot and Farnham Board of Education .....	Mr. Barrow Rule.
Alton Mechanics' Institution.....	Mr. William Curtis, President.
Ashford Mechanics' Institution...	Mr. Henry Whitfeld, President.
Banbridge (Ireland) Mutual Improvement Society.....	Mr. J. Baxter.
Banbury Mechanics' Institute ...	Mr. R. Heygate Brooks, Hon. Sec.
Berkhamstead Mechanics' Institution .....	Rev. J. Hutchinson, President.
Blackburn Literary, Scientific, and Mechanics' Institution ...	Mr. R. H. Hutchinson.
Bradford Mechanics' Institute ...	Mr. W. E. Smith.
	Mr. J. G. Best.
	Rev. C. F. Hildyard, President.
Bury Athenæum .....	Mr. J. M. Wike, Vice-President.
	Mr. W. Lawson, M.P.
Carlisle Mechanics' Institution...	Mr. E. Potter, M.P.
Chatham, &c., Mechanics' Institution .....	Mr. H. G. Adams.
	Mr. H. P. Mann.
Christchurch Mechanics' Institution .....	Mr. Joseph Clark, R.A.
	Rev. Z. Nash.
Faversham Institute .....	Mr. F. W. Monk.
	Mr. J. A. Anderson.
Gilford (Ireland) Young Men's Mutual Improvement Society.	Mr. W. R. Masaroon.
Glasgow Institution .....	Mr. Alexander Craig.
	Mr. C. J. Womersley.
Hastings Mechanics' Institute ...	Mr. Joshua Huggett.
	Mr. J. S. Foster, Secretary.
Hertford Local Board .....	Mr. Joseph Pollard.
Hitchin Mechanics' Institution...	Mr. Hiley.
Huddersfield Mechanics' Institution .....	Mr. Stavenhagen.

Hyde Mechanics' Institution ...	Mr. Thomas Ashton, President.
Kent Association of Institutes ...	Mr. W. G. Adams. Mr. F. W. Monk.
Lancashire and Cheshire Union of Institutes .....	Mr. Councillor Rumney Dr. R. M. Pankhurst. Mr. Thomas Lawton.
Lichfield Free Library and Museum .....	Captain Dyott, Chair- man.
Llanelly Mechanics' Institution	Mr. W. H. Nevill, President. Mr. R. T. Howell, Vice-President. Mr. L. D. Bevan.
London, Bank of England Library and Literary Association .....	Mr. John Coe.
„ City of London College	Rev. R. Whittington. Mr. F. Reynolds.
„ Greville House, Pad- dington .....	Mr. Bright. Mr. Faulkner.
„ Mechanics' Institution	Mr. T. J. Pearsall. Mr. S. Vallentine.
„ „ Local Board	Mr. T. A. Reed. Mr. E. Hay Currie, Hon. Sec. Mr. H. H. Sales.
„ Metropolitan Association	
„ St. George's and St. James's Westminster Local Board .....	Rev. G. B. Macilwain.
„ St. Margaret's and St. John's (Westminster) Local Board .....	Rev. W. S. Bruce. Mr. J. A. Gosset.
„ Walworth Literary and Scientific Institution	Mr. J. S. Noldwitt.
Oldham Lyceum .....	Mr. J. T. Hibbert, M.P. Mr. John Platt.
Peterborough Mechanics' Insti- tution .....	Mr. J. F. Bentley, President.
South Staffordshire Association...	Mr. John Jones.
Smethwick, Messrs. Chances' Library .....	Mr. F. Talbot.
Yorkshire Union .....	Mr. Barnett Blake.

The Secretary read the following

REPORT TO THE COUNCIL OF THE SOCIETY FOR  
THE ENCOURAGEMENT OF ARTS, MANUFACTURES,  
AND COMMERCE.

GENTLEMEN,—In reporting to you the Proceedings of the Society in connection with the Union of Institutions for the past year, I have the pleasure to record that Walter Slater, of the London Mechanics' Institution, one of the successful candidates of last year, has, after a competitive examination before the Civil Service Commissioners, obtained an assistant clerkship in the Privy Council Office, the nomination being placed at the disposal of the Council by Earl Granville, one of the Vice-Presidents, who has thus evinced the continued interest which he takes in promoting the success of the Society's proceedings. Year by year it has been my duty to record an increase in the work of the Union, and this year forms no exception; indeed, there has been a larger increase in the numbers examined at the Final Examination than in former years. The number of candidates examined this year, is 1,199, being an increase of 131 over

1,068 examined last year, while the increase of last year over the previous one was only 112.

The number of local centres at which the Examinations have been held is 100, where the Local Boards have conducted the Society's Final Examination of the 1,199 candidates who worked papers this year. The number of papers worked has been 1,744, as compared with 1,540 last year, showing an increase of 204; and the Society's examiners have on these papers awarded 1,351 certificates, viz., 315 first-class, 519 second-class, and 517 third-class, leaving 393 to which the examiners have not thought it right to award any certificates.

The corresponding result of last year's Examination gives the total certificates awarded as 1,222, divided into first-class, 236; second-class, 479; third-class, 507, with 318 papers to which no certificates were given.

Included in the above total of candidates for the present year were 35 female candidates, of whom 26 obtained certificates.

The detailed results of the Examinations, of which the above is a summary, are given in Table II., page 511, which shows the manner in which the different subjects have been selected by the candidates.

The Prince Consort's Prize of 25 guineas, graciously continued by Her Majesty the Queen, has been won this year by Thomas Healey, of the Burnley Mechanics' Institution, a book-keeper, who in the present year and during the three preceding years has obtained the greatest number of first-class certificates, viz. :—

- 1862. Arithmetic—First-class Certificate.
- „ English History—First-class Certificate, with Second Prize.
- 1863. Book-keeping—First-class Certificate.
- 1864. Algebra—First-class Certificate, with First Prize.
- „ Mensuration—First-class Certificate, with Second Prize.
- „ Chemistry—First-class Certificate, with Second Prize.
- 1865. Music—First class Certificate, with First Prize.
- „ Animal Physiology—First-class Certificate, with First Prize.

The number of prizes awarded this year has been 51, as compared with 55 last year, and the money amounts in the two years (1864 and 1865) are respectively £217 5s. and £211 5s. This is exclusive of the Royal Horticultural Society's prize of £5 which has been awarded. In reference to prizes, I must not omit to mention that one only of the five prizes offered by the Royal Horticultural Society, for the encouragement of gardeners to make themselves acquainted with the scientific and botanical principles in which their practice should be founded, has been taken. A few competitors only appeared, but it must be borne in mind that these prizes were offered after the Society's Programme for the year had been published, and

	Number of Centres.	HIGHER GRADE.				LOWER GRADE.			
		MALE CANDIDATES.		FEMALE CANDIDATES.		MALE CANDIDATES.		FEMALE CANDIDATES.	
		Exa- mined.	Passed.	Exa- mined.	Passed.	Exa- mined.	Passed.	Exa- mined.	Passed.
Aldershot and Farnham District .....	1	4	3	1	1	7	6	..	..
Burnley [East Lancashire Union] .....	4	18	13	..	..	..	..	..	..
Christchurch .....	1	10	10	..	..	4	4	..	..
Derby .....	1	1	1	..	..	..	..	..	..
Edinburgh [Philosophical Institution] .....	1	6	6	1	1	..	..	..	..
Hastings and St. Leonard's .....	1	3	2	..	..	..	..	..	..
Hertford .....	4	1	1	1	1	14	8	..	..
Kent Association of Institutes .....	3	13	11	..	..	29	16	4	4
Lancashire and Cheshire Union .....	39	220	46	..	..	410	113	50	16
Liverpool College .....	1	..	..	..	..	5	4	..	..
*London [Metropolitan Association] .....	16	88	20	42	7	368	127	86	36
South Staffordshire Association .....	12	43	29	..	..	74	38	5	5
Whitby .....	1	3	3	..	..	..	..	..	..
Worcestershire Union .....	7	23	11	..	..	36	8	..	..
York Institute .....	1	4	3	..	..	..	..	..	..
Yorkshire Union .....	22	107	38	10	2	289	179	69	38
TOTALS .....	115	539	197	55	12	1,236	503	214	97

\* These Examinations were held at a later date, on papers of a similar character, prepared by the Examiners of the Association.

thus but short and insufficient notice could be given.

In the Appendix to this report will be found the remarks of the examiners on the character of the present year's Examinations. The Tables show the occupations, actual or intended, of the various candidates in respect of whom returns were received as intending to be examined, some of whom, however, were unable to fulfil their intentions, leaving the number actually examined 1,198, as before stated. This year there has been in operation the system which was set on foot last year, of appointing visiting officers in each Union, to represent the Society, and to assist in organising the classes for adult teaching, and give aid in the formation of Local Boards, and information with respect to the Examinations. Thus visiting officers have been appointed for five Unions, as follows:—

Lancashire and Cheshire Union,	Mr. Thomas Lawton.
Metropolitan Association .....	Mr. H. H. Sales.
South Stafford Association .....	Mr. John Jones.
Worcestershire Union .....	Mr. F. Marcus.
Yorkshire Union .....	Mr. Barnett Blake.

The system, however, has been too short a time in operation to show any decided results in reference to the Examinations, though, without doubt, the labours of these gentlemen have tended to increase very materially the efficiency of the Institutions as educational establishments.

It will be remembered that in my last Report I mentioned the appointment by the Council of an Education Committee of the Society, which should include representatives from the various district unions, and whose duty it should be to

advise the Council with reference to the preparation of the Programme of Examinations, both elementary and final, and also to supervise the preparation of the papers for the elementary examinations, a work formerly performed by a body known as the Central Committee, with which the Society was only indirectly connected.

This modification in the arrangements, which, as I explained last year, was made principally with the view of avoiding the confusion that inevitably resulted from the anomalous position of the Society in the Central Committee, is believed to have worked satisfactorily. The number of candidates has considerably increased, although the Southern Counties Adult Education Society, which adopted this system last year, has this year not done so; moreover the number of centres of examination has been larger, showing that the interest in examinations of this character has been spread over a wider area.

Last year these examinations were held by 10 district unions or boards, at 104 centres; this year 16 district unions or boards have held them at 115 centres. In 1864 there were 1,798 candidates, of whom 877 obtained certificates. Of these, 435 were higher grade candidates, of whom 170 obtained certificates; 1,360 lower grade, of whom 707 obtained certificates; this year the whole number of candidates examined was 2,044, of whom 809 obtained certificates, the proportions being 594 higher grade, with 209 successful; and 1,450 lower grade, with 600 successful. The tabular statement shows that among the higher grade candidates were 55 females, 12 only obtaining certificates; and

among the lower grade were 214 females, with 97 successful.

It will be readily understood that these numbers, large as they are, most inadequately represent the amount of encouragement really afforded to the progress of Elementary Education by the various Local Boards and Institutions connected with the Society. A considerable number of them prefer adopting a scheme of elementary examinations of their own. Happily there are many highly-educated men on these boards who are perfectly capable of setting papers in such subjects as are usually included in the term elementary education, or of examining their candidates *viva voce*; and the reports of many of the Institutions show that periodical local examinations in those subjects which may be said to form the basis of all education are held in many localities with the best results.

In order to afford you more detailed information as to the state of many of the Institutions, I cannot do better than quote from the reports of our visiting officers:—

Mr. Barnett Blake reports as follows:—

There has been a continued favourable progress of the Mechanics' Institutes of Yorkshire, notwithstanding the occasional instances of depression, and a few cases of failure from exceptional causes. In the important feature of number of members, there are forty-two Institutes in which there has been a decrease of 823 members in the aggregate, but this is more than compensated by fifty-five other Institutes, showing an increase to the extent of 1,281 members. Of the larger Institutes, Leeds, Bradford, Halifax, Huddersfield, Wakefield, Darlington, Dewsbury, West Hartlepool, Scarborough, Bingley, and Keighley, show an increase considerably exceeding the slight diminution of numbers in a few others. It is, however, still more satisfactory to notice the much greater improvement in the number of class-pupils, which in fifty-nine Institutes amounts to above 18 per cent. over last year. Much of this improvement may fairly be attributed to the examinations of the Society of Arts which have been materially promoted by the Elementary Examinations. The advantages have been brought more prominently before the members of the smaller Institutes; success has been more apparently within reach, and consequently more highly appreciated, and in several instances it has led to the candidates who were induced to submit to the lower ordeal being encouraged to try for the higher certificates. Nor is the beneficial influence limited to that which appears in the number of successful candidates. At the presentation of Elementary Certificates and Prizes great interest is excited, and a stimulus given to many others to strive by mental application to achieve similar honours. I have been present on such occasions at Easton Mines, Hebden Bridge, Hunslet, Leeds, Ossett, Scarborough, Slaidburn, Stockton, and Thirsk, where the most lively interest was manifested, and further encouragement given by the offer of local prizes in addition to those given by the West Riding Educational Board. The Elementary Examinations have been held this year at twenty-one places in the Yorkshire Union where Local Boards were established for the purpose, and as seven of them were for the first time it is hoped that as every year they become better known the system will be still further extended. Of 117 candidates in the higher grade only forty were successful. Of the whole number 76 passed in Arithmetic, but 22 failed from insufficient

number of marks, and 10 failed in two additional subjects. Of 358 candidates in the lower grade there were 217 successful. Of the whole number 297 passed in arithmetic, and of these 19 failed from insufficient number of marks, and 50 failed in two additional subjects. As the greater number of the candidates are employed during the day, and have only the evening classes of the Institute by which the imperfect education of the day-school can be carried out, there is great difficulty in instructing them in history and geography sufficiently for the requirements of the Elementary Examinations. It is therefore by many considered desirable that, in the lower grade at least, it should be necessary only for the candidate to pass in one subject besides reading and arithmetic. There is, however, no doubt that the system is effecting much practical good by promoting a sound basis of instruction, and in many instances preparing candidates for the more advanced Examinations of the Society of Arts. The success of the system of Elementary Examinations must be still more evident when taking into account the large number of candidates, and bearing in mind that, with few exceptions, the larger Institutes of Yorkshire have not yet adopted it. Another good effect is the encouragement of the practice of plain needlework by young women of the working population, which is apparent not only in the increasing number of female candidates, but also in the increase of female members of Institutes, which amounts to nearly sixteen per cent. in 71 Institutes in the Yorkshire Union. This is an encouraging sign of progress, and the more valuable as it is the training of the wives of working men and the mothers of our future population. Some difficulty is experienced in carrying on the work of adult education, owing, in a few instances, to the want of competent teachers, but more often to the inefficiency of accommodation for classes. This, however, is endeavoured to be obviated by the erection of buildings, and several Institutes are now making exertions to raise funds for the purpose. At Bingley, and at Cottingley, a neighbouring village, very excellent buildings have lately been completed; whilst at Addingham, Almondbury, Calverley, Cleckheaton, Hartlepool, Leeds, Lockwood, Rothwell, Saltaire, and Shipley, funds are being raised with a fair prospect of success. In the reading-rooms of Institutes there is an increase in the number of newspapers and monthly publications, with a very slight falling-off in the number of weekly and quarterly publications, so that this department of the Institute is well maintained. In the libraries of 97 Institutes there has been an addition during the year of more than seven thousand volumes, which shows an increasing desire for literary pursuits, and is so far encouraging. Upon the whole, therefore, after making allowance for the few instances of failure, and the fluctuations to which a busy people are always liable, there is much reason to be satisfied with the condition and prospects of the Institutes of Yorkshire, and as the practical stimulus which is given to mental cultivation by the Society of Arts in its Annual Examinations becomes year by year better known, there is fair ground to expect a still increasing spread of education, and its accompanying blessings in a more civilised and moral population.

In reference to the Institutions in the Metropolitan District, Mr. Sales writes as follows:—

“The principal feature in the work of the Society of Arts, connected with Metropolitan Institutions during the past year, has been the establishment of evening classes on the basis of the City of London College and London Mechanics' Institution. These classes are held in school-rooms, as the Bromley Evening Classes; or, as in the case of the West London Youths' Institute, form part of an Institution. In either case the general principle is the same, viz., independent class instruction under duly qualified teachers. The extension of this system will produce an annual increase of candidates in the Society's examinations. In the institutions in the district, little direct educational work is carried on; but I believe that this is

owing to the prevalent system of establishing classes without regard to the requirements of the members, and placing them in the hands of unpaid teachers. The working-classes who frequent these Institutions are willing to pay for the instruction they require, but are keen enough, on the one hand to know what subjects are necessary for their individual advancement, and on the other to discern the failings of the system of voluntary tuition. As the evening class scheme becomes more generally adopted, greater progress will distinguish the operations of the Mechanics' Institutions, Mutual Improvement Societies, or by what other name they may be called. In addition to the reading-room, most Institutions include in their programme lectures, discussions, and choral societies, at which the attendance is generally satisfactory. At Greville-house Library and Reading-room a brass band has been organised, and is very popular among the members. Only one Working Men's Club is in union with the Society in London, but having, by request, attended many meetings of clubs, and explained the operations of the Society, I hope that during the ensuing autumn classes may be established in many clubs. In the Duck-lane Club, Westminster, a sound educational work is being carried on. Established for the lowest classes of the population, and frequented by them, it is not to be supposed that the attainments of the members are sufficient to bring them within the scope of the Final Examinations, nevertheless the instruction given produces perceptible and gratifying results."

#### Mr. Marcus, of the Worcestershire Union, reports—

That the Union at the present time embraces 28 Institutions and Twelve Night Schools. The members of the Institutes in Union and the attendants at the Night Schools have largely increased in numbers, and the schools are much better taught and managed. The results of the Elementary and other Examinations are also of a highly encouraging character, the numbers being largely in excess of previous years. In the Elementary Examinations by the Society of Arts there were for the Higher Grade 23 candidates, of whom 11 passed; for the Lower, 36 candidates, of whom 8 passed. This Union offers special encouragement to the candidate for these examinations by awarding three prizes (£2, £1 10s., and £1) to the best in the Higher Grade, and four prizes of 10s. each to the best in the Lower Grade. For the Final Examination of the Society of Arts there have been 19 candidates from the following Institutions:—Redditch Literary, Kidderminster Mechanics', Worcester Catholic, and Bromsgrove Literary. These numbers would have been largely increased were it not that several of the Institutes in Union, being also in alliance with the Staffordshire Adult Education Society, have elected to be examined under that Board. In addition to the Society of Arts' Examinations, the Worcestershire Union has had special examinations, and awarded prizes of its own.

#### Mr. Jones, of the South Staffordshire Association, says:—

The area covered by this Association has to a considerable extent been seriously unsettled during the past year by a succession of labour disputes, which have injuriously affected the position of many of the leading institutions of the district. At the same time several societies have extended their operations. The Willenhall Literary Institution have completed a new and commodious building, and have largely increased their member list. The class-work connected with the Institutes in Union has been, in the majority of instances, interrupted by the cause above mentioned. The Wolverhampton Working Men's College—a society which for seven years has successfully conducted a large number of classes—has not this season been so well attended, and is about to be suspended. On the other hand, the number of evening

schools has this season increased. I should here explain that the institutions in this district do not as a rule take up instruction in elementary subjects, as is the case in Lancashire and Yorkshire; this part of the work of adult education is carried on by evening schools. The Dudley Mechanics' Institute alone has an evening school as a part of its organisation, and it has this season been even more successful than in any former year. The number of Institutions in union with the Association is nearly thirty, but of these only a small proportion are connected with the Society of Arts. Several large institutions, lying just on the confines of the district, have applied for visits from me, and I have been able to stimulate them to prepare candidates for the Society of Arts Examination. On the whole I may say that, notwithstanding the temporary depression before mentioned, there has been much work done during the season, and there is every prospect that another winter will be much more satisfactory than the last.

#### Mr. Lawton, of the Lancashire and Cheshire Union, reports—

The working and progress of the Union of Lancashire and Cheshire Institutes during the past year will, to a considerable extent, be seen by reference to the following statistics:—

	Month ending May, 1864.	Month ending May, 1865.
Number of Institutes in Union .....	80	118
Number of subscribers to the Union ...	41	113
Institutes in Union with the Society of Arts .....	19	29
Institutes with Day Schools under Government Inspection .....	9 per cent.	18 pr.ct.
Institutes with Day Schools not under Government Inspection .....	8 per cent.	13 pr.ct.
Institutes with Government Science Classes .....	18	23
Institutes employing paid teachers .....	45	63
Institutes with complete arrangements for preparing pupils for the Elementary Examinations.....	30	51
Number of Elementary Certificates awarded .....	69	172
Institutes with successful candidates at the Elementary Examinations .....	11	45

It may be observed that the principal objects contemplated by the Union are—(1) The establishment of suitable class operations. (2) The employment of properly qualified teachers. (3) The distribution of the Institutes into groups, with a view (a) of facilitating the working of the examination scheme and (b) of conducting classes for special subjects at the Central Institute on behalf of the district. (4) The awarding of supplementary prizes (a) by the Union and (b) by the several districts to the most successful candidates at the Examinations.

## APPENDIX.

### EXAMINERS' REMARKS.

The Examiners in the respective subjects make the following observations on the work done in this year's Final Examinations:—

*Arithmetic.*—As a whole, the papers this year are hardly equal to those of last year in power and accuracy. The writing out is clear and legible, and the figures are round and well formed.

*Book-keeping by Double Entry.*—The average knowledge of the subject and expertness in work exhibited by the exercises in this department, as compared with those of former examinations, are well maintained, and I am well satisfied with the quality of the work generally. Some few papers are distinguished by great intelligence

TABLE I.—RESULTS OF THE EXAMINATION OF 1865.

NAME OF LOCAL BOARD.	No. of Candidates Examined at Examination by Local Board.	No. of Candidates who Passed Previous Examination by Local Board.	No. of Candidates Examined at Final Examination.	No. of Candidates who Passed at Final Examination.	No. of Papers Worked at Final Examination.	No. of First-class Certificates awarded.	No. of Second-class Certificates awarded.	No. of Third-class Certificates awarded.	No. of Prizes awarded to Candidates.	No. of Unsuccessful Candidates.
Aberdeen ...	21	16	18	16	19	1	9	7	1	2
Accrington ...	*	*	3	3	3	...	1	2	...	...
Acomb ...	1	1	2	2	4	...	1	3	...	...
Aldershot and Farnham	9	9	8	8	17	3	6	7	...	...
Alton (Southern Co. Adult Ed. Assoc.)	*	*	1	1	1	...	1	...	...	...
Ashford ...	6	4	3	2	3	1	1	...	...	1
Bacup ...	4	4	16	8	30	1	5	7	...	8
Banbridge (Ireland) ...	*	*	3	3	7	2	...	4	...	...
Banbury ...	7	5	7	7	12	6	5	1	2	...
Belfast ...	3	3	6	5	15	3	5	5	...	1
Birmingham and Midland Inst.	18	17	19	16	24	1	5	12	...	3
Blackburn...	11	6	6	3	7	...	2	2	...	3
Blandford...	4	4	3	3	7	...	5	2	...	...
Bolton ...	*	40	22	13	31	1	3	11	...	9
Bradford ...	20	16	19	19	40	8	17	13	2	...
Bristol ...	48	43	31	26	43	8	13	12	2	5
Burnley (East Lancashire Union)	55	14	35	31	69	5	16	24	3	4
Bury (Lancashire) ...	12	6	6	2	7	...	2	5	...	4
Calverley ...	*	*	2	2	6	1	2	3	...	...
Carlisle M.I.	4	4	5	4	6	2	...	3	...	1
Chatham, Rochester, Strood, and Brompton.	4	4	6	6	16	3	4	7	1	...
Chelmsford ...	3	3	3	3	5	...	2	3	...	...
Christchurch (Hants)...	10	10	11	6	17	...	2	5	...	5
Clitheroe ...	7	4	4	4	8	...	...	6	...	...
Crewe ...	11	11	11	9	24	1	4	7	...	2
Dean Mills ...	2	2	2	2	2	...	1	1	...	...
Deptford...	8	7	7	6	10	...	3	4	...	1
Derby ...	1	1	1	1	3	2	1	...	...	...
Devonport ...	24	21	34	32	72	13	28	23	2	2
Edinburgh (Lit. and Phil. Inst.)	5	5	7	7	9	1	5	3	...	...
Farsley ...	2	2	1	1	1	...	...	1	...	...
Faversham ...	*	*	8	7	15	1	4	6	...	1
Gliford (Ireland) ...	6	5	8	8	10	2	4	2	1	...
Glasgow (Athenaeum) ...	26	26	25	25	33	17	7	6	4	...
" (Institution) ...	32	25	21	15	24	1	11	4	...	6
" (Mechanics' Institution)...	95	91	70	58	79	12	28	27	...	12
" (Popular Evening Classes Ander- sonian University) ...	20	16	23	22	28	8	10	8	4	1
Hallifax (Mech. Inst.) ...	8	8	7	7	8	2	3	2	...	...
" (Working Men's College)	25	20	27	26	31	9	18	3	...	1
Haslingden ...	4	4	10	3	13	1	1	1	...	7
Hastings and St. Leonard's	3	2	2	2	4	...	2	2	...	...
Haughton Dale ...	3	1	4	4	9	1	1	6	...	...
Hertford ...	4	4	5	5	9	3	4	2	...	...
Hitchin ...	1	1	4	3	5	1	1	1	...	1
Hull ...	11	10	11	10	17	2	4	9	1	1
Hunslet ...	*	*	1	1	2	...	1	1	...	...
Ipswich ...	22	20	17	16	24	5	9	7	...	1
Leeds (West Riding Educational Board, Yorkshire Union) ...	*	22	28	22	42	5	12	12	2	6
" Young Men's Christian Association	4	4	6	5	7	2	1	2	...	1
Leicester ...	4	4	5	5	6	3	2	1	...	...
Lichfield ...	8	7	7	7	9	3	4	2	...	...
Liverpool College	5	4	3	3	6	...	1	6	...	...
London (City of London Coll.)	78	74	102	89	139	51	36	33	16	13
" (Royal Polytech. Inst.)	23	22	24	19	28	6	11	4	2	5
London Metropolitan Assoc. (Hackney)	*	*	2	2	5	2	1	2	...	...
" (Lambeth) ...	*	*	7	4	9	...	2	4	...	3
" (London M.I.)	8	6	12	12	19	5	8	4	1	...
" (Pimlico) ...	*	*	1	1	2	...	1	...	...	...
" (St. Stephen's, Westm.)	12	8	8	6	14	3	3	4	1	2
" (Stepney Deanery)	12	12	8	7	10	4	2	3	...	...
Louth ...	4	4	5	4	5	2	1	1	...	1
Macclesfield ...	16	9	8	4	12	...	...	4	...	4
Manchester (Lancashire and Cheshire Union)	13	8	15	13	26	2	6	12	...	2
Manchester Mechanics Inst.	63	46	57	50	79	21	26	16	...	7
Middlesbro' ...	6	4	10	8	11	3	4	2	...	2
Mossley ...	18	13	17	15	22	4	8	5	...	2
Newcastle-on-Tyne Church of Eng. Inst. Mechanics' Inst.	*	*	2	2	2	...	...	2	...	...
" (Lycœum) ...	2	2	9	8	14	1	6	5	...	1
" (Science School)	28	18	22	18	29	5	10	6	1	4
Paisley (Artizan's Inst.)	29	29	35	22	36	6	8	8	...	13
Pembroke Dock ...	27	25	28	24	30	2	12	12	...	4
Peterborough ...	10	10	11	11	21	7	7	6	...	...
Rawenstall ...	2	2	1	1	1	1	...	...	...	...
Reeth ...	*	*	7	3	10	1	...	2	...	4
Salford ...	10	*	2	2	7	...	...	2	...	...
Scarborough ...	31	31	44	35	63	15	20	16	2	9
Selby ...	*	*	5	4	17	2	1	7	...	1
Slaidburn ...	*	*	1	1	2	...	1	...	...	...

\* Returns none, or incomplete.

TABLE 1—(CONTINUED.)

NAME OF LOCAL BOARD.	No. of Candidates Examined at Previous Examination by Local Board.	No. of Candidates Examined at Previous Examination by Local Board.	No. of Candidates Examined at Final Examination.	No. of Candidates who passed at Final Examination.	No. of Papers worked at Final Examination.	No. of First-class Certificates awarded.	No. of Second-class Certificates awarded.	No. of Third-class Certificates awarded.	No. of Prizes awarded to Candidates.	No. of Unsuccessful Candidates.
Slough ... ..	2	1	13	11	16	5	4	4	2	2
Southampton ... ..	23	21	21	17	30	5	12	6	...	4
South Staffordshire Union (10 centres) ... ..	45	42	65	54	89	14	29	27	...	11
Staleybridge ... ..	3	2	2	1	2	...	...	1	...	1
Wakefield ... ..	5	5	...	7	13	...	...	4	...	...
Whitby ... ..	3	...	...	3	7	1	3	3	...	...
Wilden ... ..	5	...	...	2	6	...	...	4	...	...
Woolwich (Royal Arsenal) ... ..	39	39	23	14	30	1	7	6	...	14
Worcestershire Union (3 centres) ... ..	33	12	12	6	20	...	2	6	...	6
York ... ..	4	3	8	6	15	3	5	2	...	2
Totals.....	1,135	992	1,199	999	1,744	315	519	517	51	200

In addition to the above List of Prizes is the Horticultural Society's Prize of £5, which was awarded to a Candidate in Botany, examined at the Slough Local Board, being the only one obtaining a Certificate in that subject who is a gardener by profession.

TABLE II.—NUMBER OF PAPERS WORKED IN EACH SUBJECT IN THE FOUR LAST YEARS; WITH THE RESULT FOR THE YEAR 1865.

SUBJECTS.	1862.	1863.	1864.	1865.				
				No. of Papers Worked.	No. of First-class Certificates.	No. of Second-class Certificates.	No. of Third-class Certificates.	No. of Papers in respect of which no Certificate was awarded.
Arithmetic .. ..	336	358	431	446	79	109	175	83
Book-keeping .. ..	169	182	210	275	115	142	15	3
Algebra .. ..	96	81	93	68	8	22	19	19
Geometry .. ..	26	40	35	26	1	2	16	7
Mensuration .. ..	44	42	50	43	...	7	20	16
Trigonometry .. ..	11	12	13	10	...	3	1	6
Conic Sections .. ..	2	2	1	1	...	...	1	...
Navigation, &c. .. ..	1	3	4	4	2	...	1	1
Principles of Mechanics .. ..	16	11	8	11	1	2	6	2
Practical Mechanics .. ..	15	17	14	15	...	...	7	8
Magnetism, Electricity, &c. .. ..	8	21	22	19	2	3	5	9
Light and Heat .. ..	...	...	...	7	3	3	1	...
Astronomy .. ..	5	3	4	1	...	...	1	...
Chemistry .. ..	37	81	99	107	10	33	30	34
Animal Physiology .. ..	40	16	42	84	4	12	18	50
Botany .. ..	9	3	8	12	1	2	2	7
Agriculture .. ..	1	1	4	...	...	...	...	...
Mining and Metallurgy .. ..	17	16	11	6	...	4	1	1
Political and Social Economy .. ..	6	7	1	5	...	2	2	1
Domestic Economy .. ..	8	11	10	13	4	5	2	2
Geography .. ..	69	58	88	87	17	26	27	17
English History .. ..	80	71	89	94	9	34	37	14
English Literature .. ..	21	23	26	30	11	11	5	3
Logic and Mental Science .. ..	18	18	9	15	4	7	4	...
Latin and Roman History .. ..	20	16	21	9	2	3	3	1
French .. ..	80	88	77	99	4	19	51	25
German .. ..	17	18	26	19	4	10	5	...
Italian .. ..	...	...	...	4	3	...	1	...
Spanish .. ..	...	...	...	10	3	1	4	2
Freehand Drawing .. ..	28	74	50	56	1	11	21	23
Geometrical Drawing .. ..	14	55	66	128	21	29	26	52
Music.. ..	23	32	28	40	6	17	10	7
Totals .. ..	1,217	1,360	1,540	1,744	315	519	517	393



and accuracy. The number of candidates continues to increase.

*Algebra.*—Whilst there have been several failures—rather more than one-fourth of the total number of candidates having fallen through—a good deal of talent and acquaintance with the subject has been evinced by a fair portion of those who have passed. Every question has met with a solution among the papers sent in, which is a favourable symptom, as one or two of them are of a kind to call forth the exercise of original thought. Altogether I regard the result of the examination as of an encouraging nature. In many instances the literary style of answering is good. In other cases, however, a more diligent study of the English language might be recommended with advantage to some of the candidates. The word “ternary” appears to have been a stumbling-block to some, it having been variously interpreted as referring to the numbers 2, 5, and 7.

*Geometry.*—The general character of the papers is good. Several candidates have evinced aptitude in solving problems. Many have shown that they appreciate closeness of logical sequence, and none failed to exhibit some benefit gained by their study of the subject.

*Mensuration.*—It may be observed that none of the candidates are in the first class, and that there are too many in and below the third. This I attribute to the want of due attention to the elements of the subject. In the arithmetical part their work is satisfactory, but in the geometrical part it is not.

*Trigonometry.*—The answers to the questions were very well worked out, and although none of the candidates obtained sufficient marks to be placed in the first class, those who have second-class certificates did not fail for want of ability. All the important and more difficult questions were answered by one or other of the candidates.

*Conic Sections.*—Only one candidate has answered the questions in the Conic Sections and Algebraical Geometry paper. Although the answers are not as good as heretofore, yet the subject deserves encouragement, for the disciplinary value of it is very great, and I cannot recommend the Council to discontinue it.

*Navigation and Nautical Astronomy.*—The number of candidates in this subject is still very small. There is an improvement in the style of working the problems, and two first-class certificates have been awarded.

*Astronomy.*—It is strange that a single candidate only furnished any answers to the several questions. Year by year I have been urging increased attention to those parts of mathematics on which astronomy rests, and upon their practical application. In previous years I have totally failed in obtaining one satisfactory answer to any question on either the theory or the practice of interpolations. Last year a very satisfactory advance was shown in the application of spherical trigonometry, and in the practical reduction of observations as far as required. This year this is almost totally wanting, and the questions answered or attempted to be answered, were those rather upon the literature of astronomy than upon astronomy either theoretical or practical. I am disappointed. It is clear that the paper set, although by no means difficult, has been so considered. I suppose next year the examination paper must be more elementary. This is to be regretted. In the answers some knowledge of the application of algebra and trigonometry is shown, but to no great extent.

*Principles of Mechanics.*—Pleased as I am with the evidences of considerable knowledge on the part of the majority of the candidates, yet my pleasure is mixed with some regret in seeing a want of clearness and perspicuity, which spoils the effect of the results, and renders it a difficult task to assign fairly the marks due to them. I have never been obliged to send you a qualified report before, but on this occasion I think that a word of cau-

tion to the candidates as to more earnest effort to secure method, well-digested arrangement and neatness of their papers will be for their good. I am glad to be able to mention one exception to the defect which marks the generality of this year's papers.

*Practical Mechanics.*—I have been unable to award any certificates of the first or second class. I believe that this is the first occasion upon which so unfavourable a result has occurred, and it has been very apparent to me that the candidates have not entered with sufficient care upon the course of reading pointed out for their guidance.

*Electricity and Magnetism.*—The examiner has much pleasure in reporting that one of the two most universal practical applications of this subject, namely, electro-telegraphy, appears this year to have received more attention than heretofore. The other not less universal application to the mariner's compass, its construction, its deviations, and the most practicable methods of correcting the errors therein arising, does not yet appear to command the attention of advanced students to the extent the subject is entitled to, considering the present vast and increasing importance of iron in marine architecture.

*Light and Heat.*—The candidates have all shown considerable knowledge of the properties of light and heat, which form important portions of Natural Philosophy. They have all, however, shown the need of more exercise in answering examination questions, so as to enable them to make the best use of their acquired knowledge during examinations, by answering each question completely, and yet in a condensed, distinct, and accurate manner, giving also the figures correctly where required.

*Chemistry.*—There are distinct evidences in the papers that candidates pay more attention to analytical chemistry than was the case some years ago. But still there is considerable room for improvement in that direction. I believe that many teachers of chemistry are hardly aware how easy it is to give practical instruction in elementary qualitative analysis to students without great expenditure of time or money. Every course of instruction in chemistry might include practical exercises of that kind.

*Mining and Metallurgy.*—The observations of last year are equally applicable to this. None of the papers exhibit a degree of excellence worthy of special remark.

*Botany.*—Of the twelve candidates this year, three have not complied with the required conditions as to the number of questions to be answered in each section. The only candidate passed in the first-class left five questions unanswered, but the answers given indicate a well-grounded acquaintance with the subject. The two papers of the second class are of tolerable promise, and improved by another year's experience would probably rank higher. All candidates would do well to handle living plants more frequently, dissecting and describing them as they go on in accordance with the examples given in the works recommended to them as text-books.

*Animal Physiology.*—The results of the examination this year show that, out of eighty-four candidates, four are in the first class, twelve in the second, eighteen in the third, and fifty are not placed. Since both teachers and pupils and self-taught students may be supposed to have learnt, by the issue of previous examinations, that *real merit*, in its several degrees, can alone obtain the several orders of certificates, it seems, at first sight, disheartening that the results are not more satisfactory. Of the fifty candidates “not passed,” thirty-three have obtained only 20 per cent., or less, of the full number of marks; and I have no hesitation in describing these as immature students, even of their own language, prematurely offering themselves for an examination in so special a subject as Physiology. The first paper in the first class is admirable, a few slips only depriving it of the

full number of marks. There are a few papers in classes 2, 3, and 0, which fail to take higher places from deficient *quantity* of answers, the quality being good of what they contain. To justify my strictures on the majority of thirty-three of the fifty unpassed papers, I append a few examples of the sort of delinquency which I maintain unfit the authors of them for being candidates in an advanced science:—

## I.

*Errors in scientific terms which may be more or less excused, perhaps:—*

Membrum tympanum ....	} for membrana tympani
Membrana tympani.....	
Cancellæ.....	„ cancelli.
Liquor sanguinus capillaries	„ { liq. Sanguinis capillaries.
Mammils .....	} „ mammals.
Mammiles .....	
Gelitenous .....	„ gelatinous.
Carbonaceous .....	„ carbonaceous.
Sacchrine .....	} „ saccharine.
Sachrine .....	
Neucleus .....	„ nucleus.

## II.

*Errors in English, unpardonable:—*

Ouses .....	for oozes.
Air-like vessels .....	„ hair-like vessels.
[Take] panes .....	„ pains.
A not .....	„ a knot.
Fowl [air] .....	„ foul.
Hear .....	„ hair.
Respiar .....	„ respire.
Differant .....	„ different.
Suffication .....	„ suffocation.
A sleep .....	„ asleep.
Ere .....	„ ear.
Aire .....	„ air.
As .....	„ has.
Byle .....	„ bile.
Increditable .....	„ incredible.
Ordours .....	„ odours.
Two .....	„ too.
Secrets .....	„ secretets.
Togeather .....	„ together.

The use of two I's for one is constant, as in "ventillation," "controll," &c. Such phrases as these occur—"is for to make," "greatest of nicety," "inodorous smells" [used twice in the same answer, so the incongruity is not accidental, but in the writer's mind], the blood is "also contaminated" by saline constituents which are natural to it—and so on.

## III.

*Errors of a special kind and absurd:—*

1. "Pancreas" means "sweet," means "sweet-bread," is so-called, *i.e.*, pancreas, because it is "sweet," because it is "acid," it lies "behind the back," it is a "bag," it is "above the diaphragm." 2. Bone is formed of "mucous" matter outside, and of "nervous" matter in, the latter being partly grey and partly white; it is made of "cells" and "sacs." 3. Bone "consists of long layers of cartilage arranged in a very nice manner," "it has a pleasing structure." 4. The red blood corpuscles each contain a gland and a duct," but "it requires a great power of the microscope to find them." 5. The "external auditory meatus," being confounded with the "alimentary canal," by two candidates, is described as "twenty feet long, one and a half inch wide, and going zigzag through the abdomen, &c." 6. The "Eustachian tubo" assists in breathing," "it exists," the same writer adds, "in man, ourang-outang, and all kinds of monkeys," "it carries away wax," "it carries away mucus and excess of air after it has been used for making vibrations," "it prevents choking," it is "connected with the la-

byrinth, and only exists in those classes of animals *who* have a keen sense of hearing, as the deer, man, &c.," it "carries away effete or superfluous matter into the nasal cavity." 7. Reflex movements are such as the "secretion of gastric juice," by sensori-motor movements "we act as we think proper." As two final examples I transcribe the following literally:—"The osseous tissues present a very pleasing structure under the microscope, the majority of them being of a circular-like shape, with a kind of a nucleus in the centre, and are so adapted to fit closely together and form a compact mass, and are so small that they are easily carried along with the blood to that portion of the bone that needs nutrition." 2. In answer to a question on the uses of the blood and of its several parts, a candidate's *sole* reply is this—"The blood is said to be the life of the body, for there is no part of our body, if an incision be made in, the least whatever, some portion will come out. It also helps to nourish and build up this goodly frame of ours. Its constituents are, in a pure state, salts, albumen, fibrin, red and white corpuscles, these may be found in coagulated clot." The inaccuracies, the confusion of thought and expression, and the bad grammar, punctuation, and orthography, illustrated by the above examples of errors, constituted about *one-third* of what a strict scrutiny would reveal. Unless dealt with firmly such defects may increase. Nay, in my opinion, they require exposure, and public notice of some kind or other. At all events, advice should be given to future candidates or their teachers, as, indeed, I gave last year. If a strict hand be not held over them, the examinations of the Society of Arts in the subject of "Animal Physiology" will do not only no good, but a large amount of evil.

*Domestic Economy.*—The answers sent in this year on this subject show a gradual improvement over past years, and are better than in any previous examination which I have had, some of the answers showing a knowledge of the nature and composition of food, &c., and that the writers of them have profited from such papers as those of Dr. Lyon Playfair, in *Good Words*, and altogether making one feel that their knowledge may be useful to them in every-day life.

*Geography.*—I am better satisfied, on the whole, with this year's papers than with those of any former occasion. A large number of them reach a fair, and several a very high, degree of merit. There are, indeed, several failures; but, taken altogether, the answers give evidence of more preparation and of study directed to a definite purpose, than I have hitherto observed. This is an advance in the right direction. In geography, as in other subjects, diligent and methodical study, directed by progressive stages towards a definite object, can alone lead to success. The first-class papers of this year do very great credit to the writers.

*English History.*—The answers on this subject are, on the average, better than those of last year; though a few are so bad that it is difficult to understand how their authors can have been advised to offer themselves for examination on this subject. Those who are placed in the first class have laid a good foundation for future reading; but those in the second are generally deficient in accuracy as well as in quantity. Perhaps the period proposed as the subject for examination is too long. If by shortening it more accurate knowledge could be secured, the change would certainly be for the better. With regard to the form of the answers, there is a great improvement this year; and, with a view to maintaining this advance, it may be worth while to repeat the suggestion made last year—that candidates should practice themselves in answering questions on papers for their tutors from time to time.

*English Literature.*—The papers which I have now examined are certainly not less satisfactory than those of any previous year. There are but very few of them in which the candidates have not proved their sound ac-

quaintance with the text of the books in which they have been examined. A good proportion of the answers are well expressed, and show thoughtfulness and judgment. But two or three of the candidates have wasted their time in making imperfect, though tedious, grammatical analyses of the passages contained in the questions. As I have met with the same in some former examinations, I think it best to give a caution on the subject. It should be understood that no marks can be given for anything beyond an answer to the examiner's questions.

*Logic and Mental Science.*—Nearly all the candidates show very fair preparation in the subject of logic, and a few more than a popular acquaintance with it. The papers on mental and moral philosophy are not generally so good, and mostly evince a hasty preparation of the subjects. Some of the candidates, however, show a very fair acquaintance with one or even two of the prescribed text-books.

*Latin and Roman History.*—The work has a little fallen off both in quantity and quality.

*French.*—On the whole this year's papers are very satisfactory. It is true that I can only recommend four candidates for a first-class certificate, and that for papers which only just reach the standard. Nor are the second-class certificates numerous either; but I am able to award no less than fifty-one third-class certificates, which raises the total number of successful candidates to about three-fourths of the whole number, a proportion considerably larger than on any previous occasion, whilst the standard this year is certainly not lower. The chief cause of this result is the fact that the candidates have mostly confined their attention this year to one section of the examination paper, instead of attempting to give unconnected fragments of the different sections, as was too much the case previously. Altogether the candidates seem to have gone more methodically to work, which is in itself a great progress.

*German.*—In comparing this year's papers with those of last year, I am happy to find that in every section they are distinguished by greater ability and bear the marks of closer application. Not one candidate had to be rejected. Only six out of nineteen did not write the essay; some of those, however, who have done so, sometimes deviate from the point in question. A stricter keeping in view of the subject to be handled, and a more logical method of arranging the matter, ought in future to be aimed at. The questions on Grammar are answered with greater precision than last year, and the majority of the translations from German into English are very good. The gainer of the highest number of marks has mastered all the four pieces selected for translation, and left hardly any part of the examination paper untried.

*Italian.*—The papers, with one single exception, are highly satisfactory. The candidates have shown that their knowledge of Italian exceeds the average standard usually attained by many who yet are supposed to have mastered a foreign language. One paper evinces much readiness, if not style, in translating into Italian; and all show careful grammatical studies, and a fair acquaintance with the peculiar idioms.

*Spanish.*—Most of the candidates have tried for a higher certificate than their knowledge of Spanish seems to warrant, and a few only have complied with the requirements. This mistake has damaged the result of the examination of some who, in all probability, would have been more successful had they tried for a lower class certificate.

*Free-hand Drawing.*—Candidates for examination were requested to bring any drawings they had made during the last twelve months as proofs of their abilities; this gave each candidate an opportunity of showing what he had learnt, and what his taste was, if he had any peculiar talent. There were fifty-six candidates who sent in

drawings of the following subjects:—Two, fruit and flowers; three original designs for manufacture; four, animals; seven, human figures, or portions of the figure; eight, landscapes; thirty-one, copies of scrolls and drawings of flattened leaves and flowers. This analysis shows pretty well what is being done for art-education throughout the country.

*Geometrical Drawing.*—Since the general nature of the examination in Practical Geometry must be better known from year to year, it might be expected to improve. This, I regret to see, is not the case,—the proportion of failures to the whole number is greater on this than on former occasions. It is well perhaps to point out again the apparent causes of these failures in the hopes of putting future candidates more on their guard against them. They are—1st. A neglect of the conditions of the questions, either arising from carelessness in reading them, or from misconception of their import; 2. Neglect of the repeated injunction not to attempt more than the prescribed time allows of being carefully and thoughtfully accomplished; 3. A want of knowledge of the elements of solid or co-ordinate geometry, causing a great loss of time by compelling the candidate to adopt complicated and circuitous constructions instead of the brief and simple ones based on sound elementary knowledge. It is but fair to the successful candidates to state that their work is highly creditable, as regards the neatness and accuracy of their drawing.

*Music.*—This year's are certainly, on the whole, the best papers I have yet had. Of the few candidates who have not passed, the failure is attributable (as on former occasions) to their having attempted the harmony and counterpoint questions, with insufficient or no preparation, to the neglect of those questions which possibly they might have answered correctly. The second-class papers—nearly half of those worked—are very creditable.

TABLE III.

This table shows the ages of the 1,369 candidates from whom return papers were received. Of these 1,199 underwent the final examination.

Age.	No. of Candidates.	Age.	No. of Candidates.
16 ..	136	31 ..	9
17 ..	176	32 ..	10
18 ..	181	33 ..	5
19 ..	185	34 ..	3
20 ..	138	35 ..	4
21 ..	101	36 ..	8
22 ..	78	37 ..	6
23 ..	75	38 ..	1
24 ..	64	39 ..	6
25 ..	48	40 ..	1
26 ..	47	43 ..	3
27 ..	27	44 ..	3
28 ..	20	45 ..	2
29 ..	15	46 ..	1
30 ..	15	48 ..	1
Total 1,369			

TABLE IV.

OCCUPATIONS, PRESENT OR PROPOSED, OF THE 1,369 CANDIDATES FROM WHOM RETURN PAPERS WERE RECEIVED:—

Accountants [and	Art-Student .. ..	1
Clerks] .. .. 11	Assistant, Building	
Agents .. .. 2	Surveyor's .. ..	1
Apprentice to Linen	„ Corn Merchant's	1
Manufacture .. .. 1	„ Hotel .. ..	1
Architects .. .. 4	„ Librarian's .. ..	1

Assistant, News Agent's .. 1	Confectioners .. 2	Packer .. 1	Smiths .. 3
" in an Observa- .. 1	Cooper .. 1	Painters .. 3	Soap-manufacturer .. 1
" Pawnbroker's .. 1	Cotton-piecers .. 10	Pattern-makers .. 3	Spinners .. 10
" Registrar of .. 1	Curriers .. 3	Pawnbroker .. 1	Spur-plater .. 1
Births, &c. .. 1	Customs' Officers .. 3	Perfumer .. 1	Staff-sergeant .. 1
Auctioneer .. 1	Dentists .. 2	Picture-frame-maker .. 1	Stationers .. 4
Auctioneers' Clerks .. 2	Designers .. 5	Photographers .. 2	Steel-pen tool maker .. 1
Bakers .. 2	Die-sinkers .. 2	Photographic apparatus .. 1	Stoker .. 1
Bandsman .. 1	Drapers, &c. .. 11	maker .. 1	Stone cutter .. 1
Bell-hanger .. 1	Draughtsmen .. 11	Piece-looker .. 1	" mason .. 1
Blacksmith .. 1	" Architect's .. 1	Plasterer .. 1	Storekeeper .. 1
Block-printer .. 1	" Mechanical .. 1	Plumbers, &c. .. 5	Students .. 2
Boat-builder .. 1	Druggists, &c. .. 6	Porters .. 2	Surgeons .. 2
Bookbinders .. 3	Drysalter .. 1	Post-messenger .. 1	Surveyors, &c. .. 2
Book-keepers .. 33	Dyers .. 2	Printers .. 5	Tailors .. 4
" and Correspondent .. 3	Engineers .. 66	" reader .. 1	Teachers' other than .. 1
Booksellers .. 3	Engine fitters .. 6	Pupil teachers .. 54	pupil teachers .. 39
Boot-closer .. 1	" keeper .. 1	Railway porter .. 1	Throstle overlookers .. 2
Brass-finishers .. 5	Farmer .. 1	Registrar of Births and .. 1	Time keepers .. 3
" founder .. 1	Fire-beater .. 1	Deaths .. 1	Tin-plate workers .. 2
Bricklayers .. 4	Fitters .. 10	" to a public com- .. 1	Tobacco manufacturer .. 1
" maker .. 1	Foreign correspondent .. 1	pany .. 1	Tobacconist .. 1
Brushmaker .. 1	Foremen .. 4	Roller-coverer .. 1	Turkey-red dyer .. 1
Builders .. 7	Gardeners .. 7	Rural messenger .. 1	Turners .. 10
Butchers .. 2	Gas-fitter .. 1	Saddler .. 1	Upholsterers .. 4
Cabinet-makers .. 2	Gas-meter inspector .. 1	Saddler's ironmonger .. 1	Vellum-binder .. 1
Card-maker .. 1	" maker .. 1	Sailmaker .. 1	Viewers [Tower] .. 2
Carpenters .. 10	Glass-cutter .. 1	Sailor .. 1	Warehouse men and .. 1
Carpet-weavers .. 5	" painter .. 1	Salesman .. 1	lads .. 56
Carver and Gilder .. 1	Gold-beater .. 1	Schoolmasters .. 7	Watchmakers .. 3
Cashiers .. 4	Governesses .. 4	" mistress .. 1	Weavers .. 53
Caulker .. 1	Grocers, &c. .. 12	Self-actor minder .. 1	Wheelwright .. 1
Chain-maker .. 1	Harness maker .. 1	Sergeants of police .. 2	Whipmaker .. 1
Chemists .. 20	" weaver .. 1	Shawl-pattern designers .. 2	Whitesmith .. 1
" and Druggists .. 14	Holy orders .. 2	" weaver .. 1	Wire-drawer .. 1
Civil Engineers .. 2	Housekeeper .. 1	Shipwrights .. 26	Wood-carver .. 1
Clerks, Architects' .. 2	Inland Revenue officers .. 3	Shoe-dealer .. 1	Wool-sorters .. 7
" Bankers', Com- .. 392	Iron-founder .. 1	" makers .. 3	Wool-stapler .. 1
mercial, &c. .. 392	Iron-merchant .. 1	Shopmen .. 2	Woollen manufacturer .. 1
" Carrier's .. 1	" mongers .. 4	Shorthand writer .. 1	Writers .. 6
" Chemist's .. 1	" turners .. 4	Silk-sizer .. 1	Undetermined, or not .. 1
" Civil Service .. 3	Jewellers .. 6	" weavers .. 2	given .. 39
" Colliery .. 3	Joiners, &c. .. 17	" winder .. 1	
" to Commissioner .. 3	Knotted .. 1	Silversmith .. 1	
of Taxes .. 1	Laboratory assistant .. 1		
" Customs' .. 2	Labourers .. 4		
" Engineer's .. 1	Leather dealer .. 1		
" Estate Agent's .. 1	Letter sorter .. 1		
" Gas Office .. 2	Lithographer .. 1		
" Government .. 4	Lithographic printer .. 1		
" Insurance .. 5	Lock manufacturer .. 1		
" Law, &c. .. 17	Machine joiner .. 1		
" in Money Order .. 1	Machinists .. 2		
Office .. 1	Makers-up .. 2		
" in Ordnance Sur- .. 1	Manager .. 1		
vey Office .. 3	" at magnesium .. 1		
" Post-office .. 1	works .. 1		
" Privy Council .. 1	Masons .. 3		
Office .. 1	Measurer .. 3		
" Railway .. 12	Mechanics .. 37		
" Surveyor's .. 1	Medical students .. 4		
" Weighing .. 1	Messengers .. 2		
Clog-maker .. 1	Milkman .. 1		
Cloth-cutter .. 1	Millwrights .. 10		
" finisher .. 1	Minder .. 1		
Clothier .. 1	Miner .. 1		
Coach-body maker .. 1	Mining engineers .. 2		
" builder .. 1	" surveyor .. 1		
" painter .. 1	Missionary .. 1		
" trimmers .. 2	Model-maker .. 1		
Coal Agent .. 1	Moulder .. 1		
" Dealer .. 1	Muslin-man .. 1		
Collectors .. 5	Needle-hardener .. 1		
Colour-maker .. 1	Oil-cloth-maker .. 1		
Commercial Traveller .. 1	Oilman .. 1		
Compositors .. 4	Optician .. 1		
	Overlookers .. 5		

The report of the discussion will appear in next week's *Journal*.

### Fine Arts.

**MONUMENT TO EUGENE DELACROIX.**—A monumental tomb has just been raised over the remains of the painter Delacroix, in the cemetery of Père la Chaise. It is executed, according to the desire of the deceased, in the severest style of Greek art, and consists of a simple parallelogram of Volvic stone, placed upon a granite base—in fact, a copy of the "Tomb of Scipio"—and bearing no other inscription than the name of the deceased. A number of artists and friends of the late painter attended the ceremony; and discourses were pronounced by M. Rivet and by M. Berryer, who spoke impromptu at the urgent request of those assembled.

**MONUMENT TO PEDRO IV. AT LISBON.**—Two French artists, M. Daviond and M. Robert, have obtained the first prize in this competition; a native artist obtained the second, another French sculptor the third, and the fourth and fifth were awarded to Italians. The design is new, and deserves a few words of description. The monument will consist of four parts—a basement of granite, a pedestal, a column, and a statue. At the angles of the square basement are four seated figures, representing Prudence, Justice, Force, and Temperance; the effect of these is to connect the whole design, and lead the eye naturally from the base to the summit. On the walls of the basement are sculptured the arms of the

twenty principal towns in the kingdom, indicating the popular unanimity of the nation in the work. On the pedestal are inscribed the facts which gave rise to the monument. The column is decorated with four figures of Fame, in bas relief, on its lower portion, and these figures are connected together by garlands. The capital of the column is decorated with the cypher and arms of the king, in the midst of palm branches and symbolic flowers. The figure of Don Pedro IV. is dressed in a general's uniform; the right hand holds the constitution which he inaugurated, while the left rests on the hilt of the sword. This statue is to be ten feet high, cast in bronze, and gilt by the electro-galvanic process. The entire monument will be nearly one hundred and forty feet high.

**EXHIBITION OF CARICATURES.**—The whole of Europe and France in particular is just now full of exhibitions—agricultural, industrial, artistic, and miscellaneous. One of a new kind is talked of in Paris at the present moment—an Exhibition of Caricatures. There is little doubt that such a collection might be made extremely interesting, but at the same time there would be some difficulty in knowing what to admit and what to exclude. Not only would the political question raise some difficulties, but many of the productions which a hundred years since were considered only grotesque could not now certainly be exhibited in public. Such an exhibition, moreover, could not well be made international; few nations would like to show how they sketched others in past times, or to see how the caricaturists of other nations treated them.

### Commerce.

**PRESERVATION OF SHIPS.**—A communication has been made by Lieutenant A. Mariot, of the French navy, relative to the means employed by the Cochín-Chinese to protect the hulls of vessels from the attacks of the auger-worm and other mischievous creatures. M. Mariot declares that the Chinese and Annamites know how to protect their vessels effectually, and at a very small cost, and a long residence in the two countries as a naval officer gives weight to his evidence. He was struck with the extreme antiquity in appearance of many of the native vessels, and found on inquiry that they were quite as old as they looked, and that in some cases they had been bequeathed from father to son until their origin was entirely forgotten. The timber of these vessels being the same as that employed in India for the same purpose, and the waters of Cochín-China teeming with destructive creatures, it was evident that the durability of the vessels arose from some special precaution. The means employed are, according to Lieut. Mariot, a mixture of a resinous oil with a resin, applied hot to the wood; both the substances being special products of the lands on the banks of the river Meikou, the trees which yield them having heart-shaped leaves, strong roots, and throwing out suckers. The tree which yields the oil is called by the Annamites caydau, literally oil-tree, and often attains a height of more than two hundred feet; it will furnish from three to five pints of oil per week. Boats made of the wood of this tree are said never to be attacked by the auger-worm. The tree which yields the resin is described as being somewhat similar to the former. M. Mariot, when in command of the *Amphitrite* lorch, under Admiral Charnier, employed the native mixture on a boat which had been attacked by the mollusks, and at the end of a year it was perfectly free from any fresh attacks.

**GUANO IN FRANCE.**—A large deposit of guano, the produce of bats, has been discovered in a natural cave, belonging to the Commander de Beaufond, eight miles distant from Vesoul, in the department of the Haute-Saône. The deposit is estimated at about eight hundred cubic metres. This discovery recalls another which was made many years ago by Mr. George Windsor Earl, now magistrate at Penang, and published in London about the year 1854. This gentleman, in his geographical and ethno-

logical researches, discovered that vast caves in the innumerable islands of the Indian Archipelago were filled with the *degitrus* of bats, which are of enormous size in those latitudes, and have existed there by myriads, almost undisturbed, for ages. Mr. Earl says that the amount of guano in those islands is incalculable. A French chemist has analysed the guano of Vesoul, and considers it valuable as manure, a fact which helps to validate Mr. Earl's discovery, as both deposits are produced by the same creatures.

**THE EXHIBITION AT BOMBAY.**—The promoters of the proposed Great Exhibition at Bombay are losing no time in pushing forward the scheme. Already a Building Committee has been formed who will superintend all the necessary arrangements. Another has been appointed for India, one for China and Japan, one for Australia and the Cape, one for Persia and Egypt, one for Europe (to correspond with the London Commission), and one for America (corresponding with the New York Commission). A District Committee is formed for regulating the arrangement of all the articles in the building, and Government has been applied to in order to form official committees throughout India.

### Colonies.

**INTERCOLONIAL CUSTOMS.**—It appears that Victoria is going in the direction of protection, while South Australia, which is contending with it for the trade of Western Riverina, is being urged by others to go to the opposite extreme—an immediate abolition of the Custom-house. A proposal to that effect was brought forward in the Chamber of Commerce at Adelaide, but it does not appear to have excited much attention. Only 30 attended and only 19 voted. The result was that 14 persons expressed themselves in favour of an immediate abolition of the Custom-house. It was argued that a moderate increase of direct taxes would enable the revenue to dispense with the Custom-house, but how it was to be collected or what it would cost was not gone into. The special reason which makes the policy of South Australia interesting to New South Wales is, that, if it were to adopt the system of open ports, it would either compel New South Wales to do the same or put it to great expense to guard against smuggling. If spirits were admitted duty free into South Australia, how are they to be kept from the back territories of New South Wales? It would pay to cart the contraband commodities for long distances towards Sydney, perhaps into Sydney itself. A preventive service on the River Murray would be very inconvenient, and perhaps not effective, although New South Wales has only to guard against goods that have paid full duties. How much more troublesome to guard against the introduction of goods that have paid no duties at all. South Australia is, perhaps, in a better position to be able to dispense with customs dues than any of its neighbours.

### Obituary.

**SIR JOSEPH PAXTON**, late M.P. for Coventry, died on Thursday, the 8th inst., at his house, Rockhills, Sydenham. He was the son of poor parents, and was born at Milton Bryant, near Woburn, Beds, in 1803. Having while very young to seek his own livelihood, he became a gardener, and in that capacity obtained a situation to work in the gardens of Sion House. He rose to the post of foreman, and was gradually promoted by the Duke of Devonshire to the position of director of the garden at Chatsworth, and afterwards to that of manager of the Derbyshire estates belonging to the duke. He remodelled the whole of the gardens, and the many magnificent works now standing there were carried out under his direction. Amongst them was the great conservatory, a glass and iron structure, 300 feet long, which he made

the model for the great building in Hyde-park, and then of the present Crystal Palace at Sydenham. His design for the erection of a building to be constructed of glass and iron, for the Great Exhibition of 1851, was accepted by the Royal Commissioners, after 233 plans had been rejected. For his public service on this occasion he was knighted. In 1853 he commenced the building of the Crystal Palace, which was completed and opened to the public in June, 1854. In the same year Sir Joseph offered himself as a representative for Coventry, in place of his friend Mr. Geach. He was elected without opposition, and retained his seat till a few weeks ago. Shortly after his election he tendered to the Government a practical suggestion to send out a corps of navvies to perform civil work at the siege of Sebastopol, then going forward. The proposal was accepted, and he was entrusted with the organisation of the Army Works Corps—a duty which he discharged with great credit. In politics he was a Liberal, and a consistent supporter of Lord Palmerston's administration. He followed the profession of an architect and civil engineer from the time when he constructed the great glass building in Hyde-park; but he did not relinquish his position at Chatsworth. He was happy in the constant esteem of the late Duke of Devonshire, who, some time before his own death, handed to him a life-policy for £20,000, upon which he charged himself to pay the premiums for Sir Joseph's benefit. Sir Joseph Paxton was an industrious writer on horticulture, and connected with several literary enterprises. He was a Fellow of the Horticultural Society, 1826; of the Linnæan, 1833; and in 1844 he was made, by the Emperor of Russia, a Knight of the Order of St. Vladimir. The Silver Medal of the Society of Arts was presented to him in 1840, for a communication respecting his invention of a machine for the purpose of making sash bars, the account of which is given at page 87, vol. 53, of the *Society's Transactions*. He was elected a member in 1850, and was a Vice-President at the time of his death.

### Notes.

THE CO-OPERATIVE PRINCIPLE IN FRANCE.—The *Builder* states that the chief instances of application of principles of co-operation in the building trades are to be found in France. Somewhere about twenty-three years ago, M. Leclaire, the house painter, whose experiments in connection with painters' work have often been mentioned by us, described in a pamphlet the system adopted in his establishment, and gave the reasons that led him to establish it. At present the concern is a partnership, consisting of M. Leclaire himself, M. Defournaux, and the *Société de Secours Mutuels*, of which all persons in the establishment are members. In the first year the men who worked 300 days made each 300 francs (£12) as the profit, or beyond the wages, which were 4 francs a day. Improvement in the habits and demeanour of the workmen was immediately manifest. M. Chevalier, in 1848, stated, on the authority of M. Leclaire, "that the increased zeal of the workpeople continued to be a full compensation to him, even in a pecuniary sense, for the share of profit which he renounced in their favour;" and in 1857, M. Villiamé gave similar testimony. The passing of the Limited Liability Act first made similar associations possible in this country. Of successful associations of operatives alone there are in Paris upwards of one hundred. The chief of these associations is that of the masons. Its amount of business done from 1852 to 1858, both years inclusive, has increased from 45,530*l.* in the former year to 1,231,461*l.* in the latter, and its profits from 1,000*l.* to 130,000*l.* It lately paid 56 per cent. as the dividend of the year on the capital. M. Villiamé remarks that intemperance greatly decreases amongst the members of the different associations, as well as everything of the nature of coarseness and rudeness. Mr. Mill,

and all who have studied the subject, expect a great increase in the productiveness of industry from the advance of the co-operative movement.

### Correspondence.

ON THE WEAR AND TEAR OF STEAM BOILERS.—SIR, —Anybody who chooses to read my two "double-barrelled" letters—each barrel of which seems to be regarded by Mr. Clark as a modern form of the horns of a dilemma—will find convincing proof that Mr. Clark has again been drawing upon his memory for his discoveries, and upon his imagination for his claims. The ostrich-like style of defence that consists in ignoring statement and argument alike, and the lady's reasoning of continued iteration, can be of no avail to my respected neighbour with those who will give themselves the trouble of reading my "double-barrelled" epistles, as they are termed by Mr. Clark. Just, however, as even a Colt's revolver is of no use against the hide of a rhinoceros, so will no "double-barrelled" epistle—perhaps not even a round robin—be of any effect against Mr. Clark's own tough cuticle. I must confess, however, that this is quite indifferent to myself. Mr. Clark's little weaknesses on the subject of steam boilers are pretty generally known by this time. "That's my thunder—that my explanation of explosions," are perennial cries with the sage of the Adelphi, as of yore with Dennis the actor. Like another great man, he delights in fighting for ideas—and for ideas which he may annex, but certainly has never discovered. Mr. Clark's practised and boa-constrictor-like powers of literary deglutition are indeed fully recognised. The publicity, in fact, of the existence of Mr. Clark's little self-delusions on this score forms my protection. This will probably be the case even with that majority of your readers who do not care the value of an old bolt for either Mr. Clark or myself, therefore I must say that, for my own part, I do not so much regret his assertion that I have borrowed ideas from him without acknowledgment as my implied belief in the unscientific and mistaken twaddle which Mr. Clark dignifies with the title of explanations of the pitting and furrowing of steam boilers. In the one sentence by which Mr. Clark attempts to explain pitting, he is seemingly unaware of the existence of such an action as chemical affinity; and in his "explanation" of furrowing he has never dreamt of that action of internal fluid pressure which tends to form a perfect cylinder. As regards pitting, all Mr. Clark's explanation is contained in one single sentence—a sentence, by the way, which he introduces with the remark "that we are aware that electrical and galvanic action are adduced in 'explanation'" (of furrowing and pitting). "But these words," continues Mr. Clark, "have two meanings—they mean electricity and galvanism, and they mean ignorance and mystery." We see here, as plainly as anything written can be plain, that Mr. Clark expressly repudiates galvanism as accounting for pitting. We now come to that single pregnant sentence which, like a Delphic oracle, contained everything yet in the womb of the future. Instead of "ignorantly" having recourse to galvanism, Mr. Clark says—"The pitting of the metal is readily explained by the presence of chemical agents in solution in the water, and the known inequality of substance of iron plates and bars, in consequence of which the metal is gradually but unequally separated and dissolved, and probably a weak galvanic circuit may be established between the iron shell and the brass tubes, accelerating the process of dissolution." Only in that portion of the sentence which I have italicised is there to be found any attempt at explaining the irregular pock marks of pitted plates; the latter portion is, as I have shown, copied from Professor Tyndall, and could, in any case, only account for an equally spread corrosion. What Mr. Clark says, neither more nor less, is, that some

spots of the metal are softer than others—an isolated physical fact that could not, *per se*, explain why any softer or harder spot should be sooner dissolved than any other. He simply says, that some portions are easier dissolved than others, from being softer than others. In fact, it amounts to no explanation at all. Years ago I have heard a stoker explain pitting in this way; and Mr. Clark has simply clothed it in a Johnsonian sentence. In a similar mode Mr. Clark talks of “the indirectness of the strain of the steam pressure” at the joints, which is quite a different explanation from that which ascribes furrowing to the mechanical tendency to produce a correct circle, and to the furtherance of corrosion in the absence of that protecting coating of incrustation which is continually being broken off by the mechanical action. I defy Mr. Clark to show that either of these points, amongst others, have been even alluded to by himself. As to the explanations I give of the deterioration of stay-bolts, the best joke is that they are quite distinct from that of Mr. Griggs, published five years before its assimilation by Mr. Clark. Rightly or wrongly, I import novel elements into the matter. I can only suppose that Mr. Clark has not done me the honour to read what I have written, and that, misled by a strange self delusion of which he has given previous proofs, he has claimed the explanations from the mere fact of their dealing with steam boilers.—I am, &c., F. A. PAGET.

18, Adam-street, Adelphi, W.C.

[This correspondence must end here.—Ed.]

**ATMOSPHERIC RAILWAYS.**—SIR,—The atmospheric railway proposed to be laid down along the banks of the Thames is neither more nor less than the invention of the late Mr. Vallance, the well-known banker at Brighton. Thirty or forty years ago that gentleman laid down an experimental vacuum railway of one quarter of a mile in length, of the full size, and carried passengers up and down for some time very successfully. The only difference in detail between the present plan and the former is, that the exhaustion is intended to be applied at one end only, and pressure for the return trip, a variation that will not ultimately be found to answer, the object in the present plan being evidently to avoid the expense of an exhauster at each end. In practice, however, there is a very great difference between exhaustion and compression. In the former case the action seems to be instantaneous, while in the latter the effect is unaccountably retarded, owing perhaps to the elasticity of the atmosphere combined with the friction in the tube. Under the compressed system it has been found that if the pipe of communication be sufficiently long, the most powerful forge blast will not blow out a lighted rushlight placed at the further end.—I am, &c., HENRY REVELEY.

## MEETINGS FOR THE ENSUING WEEK.

MON. ... Asiatic, 8.  
TUES. ... Statistical, 8. 1. Mr. Lubbock, “On the Statistics of the Clearing House.” 2. Mr. Levi, “The Economic Condition of the Highlands and Islands of Scotland.”  
WED. ... Meteorological, 7. Annual Meeting.  
Geological, 8.  
R. Society of Literature, 4½.  
THURS. ... R. Society Club, 6. Annual Meeting.  
Zoological, 4.  
SAT. ... R. Botanic, 3½.

## Patents.

From Commissioners of Patents Journal, June 9th.

### GRANTS OF PROVISIONAL PROTECTION.

Buttons, manufacture of—1110—T. Greaves and J. S. Wright.  
Carpets, manufacture of—1499—W. Edwards.  
Casting, apparatus for making cores for—1429—D. Law & J. Bennett.

Chimneys, preventing downward draft in—1471—E. Myers and J. Stodard.  
Circular saws—1475—W. T. Hamilton.  
Coke, ovens for the manufacture of—1435—J. Giers.  
Cotton, hydraulic presses for packing—1280—E. T. Bellhouse and W. J. Dorning.  
Cotton, rollers used in preparing—1439—W. E. Newton.  
Drain pipes, apparatus for laying—1396—W. Eddington.  
Fire-arms—1433—E. Paton.  
Fire-arms, breech-loading—1461—T. Bissell.  
Fire-arms, breech-loading—1356—R. A. Brooman.  
Furnaces—1451—M. Cohen.  
Furnaces—1469—P. Young.  
Furniture, construction of vans for transporting—1495—F. Hazeldine.  
Gas burner—1437—G. Bray.  
Hoops, &c., manufacture of—1425—J. Ramsbottom.  
Iron, manufacture of—1310—J. Bennett.  
Knitting machines—1445—W. Clark.  
Lamps—1422—C. E. Moller.  
Lathes, rests for ornamental turning—1441—T. H. Hoblyn.  
Lime, manufacture of—1467—P. A. le C. de Fontainemoreau.  
Locks, keys of—1485—S. Grafton.  
Locks—1487—J. Calvert.  
Locking screws—1473—F. A. Paget.  
Machines, reaping and mowing—1371—W. Manwaring.  
Machines, rotative—1447—J. A. Heinrich.  
Oils, purifying animal and vegetable—1453—S. Sequelin.  
Pendants, sliding gas—1381—G. H. Brookes.  
Railway trains, communication between passengers and guard of—1493—I. Rogers.  
Sail cloth, printing upon—1006—J. Isherwood.  
Screw gills—1419—T. Beanland.  
Ships' bottoms, paints applicable to—1489—T. Spencer.  
Ships, apparatus for steering—1394—J. Martin.  
Ships, machine for loading and discharging cargoes from—1449—G. Elliott and R. P. Clark.  
Spherical form, machinery for turning bodies of a—1459—T. Bourne.  
Spinning machinery—1483—M. Meisel.  
Steam boilers, composition for preventing incrustation of—1324—W. Hewitt.  
Steam boilers, furnaces of—1372—T. Moldea, J. Newsome, and J. Akeroyd.  
Steam hammers—1491—P. Pilkington.  
Telegraphic supports—1390—C. and A. Varley.  
Tires, cast-steel railway—1456—J. M. Rowan.  
Trimming, manufacture of—720—J. P. Booth.  
Tubes, apparatus for cleaning the interior of—1479—J. Hare.  
Weaving, looms for—1427—D. Welsh.  
Whales, rocket guns for the capture of—550—T. W. Roys and G. A. Lilliendahl.  
Writings, &c., producing copies of—1457—R. A. Brooman.

### INVENTION WITH COMPLETE SPECIFICATION FILED.

Gas burner—1494—H. Monier.  
Ordnance, fuses for rifled—1552—G. Haseltine.

### PATENTS SEALED.

3082. R. H. Johnson.	3123. W. Cotton.
3103. C. P. Coles.	3133. W. Brookes.
3104. S. Hood.	3137. Z. Eastman.
3107. A. F. J. Claudet.	3147. H. F. McKillop.
3114. W. E. Gedge.	3178. H. Edmonds.
3119. F. A. Chevallier.	3252. L. P. E. Max.
3120. G. Brown.	178. J. Snell and W. Renton.
3121. J. White.	

From Commissioners of Patents Journal, June 13th.

### PATENTS SEALED.

3108. J. A. Pols.	21. J. Knowles.
3118. R. A. Brooman.	44. B. Dobson, W. Slater, and R. Halliwell.
3122. W. McNaught.	77. H. Chamberlain.
3125. M. J. Haines.	82. J. F. Spencer.
3126. J. L. Norton and W. Ainsworth.	107. J. B. Hill.
3134. R. A. Brooman.	127. J. Young.
3136. H. L. Hall.	164. R. Mallet.
3158. G. Leach.	180. W. Clay.
3163. J. P. Llagostera.	228. J. Hamilton, jun.
3210. T. Whitley.	248. B. Dobson.
3213. J. Wolstenholme.	291. A. Murray.
3219. J. Dodge.	443. E. B. Wilson.
3227. W. H. Preece and A. Bedborough.	476. A. Sharp.
3250. T. Bouch.	538. P. A. le Comte de Fontainemoreau.
5. J. F. Parker & J. Tanner.	

### PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

1708. A. V. Newton.	1760. C. A. Tyler.
1723. A. Knowles.	1714. J. Lovegrove.
1732. J. B. Ingle.	1738. W. Holland.

### PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

1292. J. Bunnett.	1321. G. Bartholomew.
1305. P. Dumont.	